

SPECIFICATION AMENDMENTS

Please amend the Specification as follows:

Page 6, first paragraph:

--wherein the X_1 represents chalcogen atom or $-CHR_1-$ (the R_1 represents hydrogen, halogen, alkyl group, alkenyl group, aryl group or heterocyclic group) and the R_2 ~~represents~~ represents alkyl group, the two R_2 s can be either same or different, and at least one of them is secondary or tertiary alkyl group, the R_3 represents hydrogen atom or a group which can be a substituent on a benzene ring, the R_4 represents a group which can be a substituent on a benzene ring, the m and the n represent integer of 0 to 2 respectively; and --

Page 8, third paragraph:

--Wherein the R_{11} represents a substituted or unsubstituted alkyl group, the R_{12} represents hydrogen atom or substituted or unsubstituted alkyl or acylamino groups, the R_{11} and the R_{12} are not ~~2-hydroxyphenylmethyl~~ 2-hydroxyphenylmethyl group, the R_{13} represents hydrogen atom or substituted or unsubstituted alkyl group, and the R_{14} represents a group capable of being substituent on a benzene ring. -

Page 12, fourth paragraph:

--wherein the R_{11} represents a substituted or unsubstituted alkyl group, the R_{12} represents hydrogen atom or substituted or unsubstituted alkyl or acylamino groups, the R_{11} and the R_{12} are not ~~2-hydroxyphenylmethyl~~ 2-hydroxyphenylmethyl group, the R_{13} represents hydrogen atom or substituted or unsubstituted alkyl group, and the R_{14} represents a group capable of being substituent on a benzene ring. -

Page 14, second paragraph:

--wherein the R_{11} represents a substituted or unsubstituted alkyl group, the R_{12} represents hydrogen atom or substituted or unsubstituted alkyl or acylamino groups, the R_{11} and the R_{12} are not ~~2-hydroxyphenylmethyl~~ 2-hydroxyphenylmethyl group, the R_{13} represents hydrogen atom or substituted or unsubstituted alkyl group, and the R_{14} represents a group capable of being substituent on a benzene ring. --

Page 15, first paragraph:

--wherein the X_1 represents chalcogen atom or $-CHR_1-$ (the R_1 represents hydrogen, halogen, alkyl group, alkenyl group, aryl group or heterocyclic group) and the R_2 ~~represents~~ represents alkyl group, the two R_2 s can be either same or different, and at least one of them is secondary or tertiary alkyl group, the R_3 represents hydrogen atom or a group which can be a substituent on a benzene ring, the R_4 represents a group which can be a substituent on a benzene ring, the m and the n represent integer of 0 to 2 respectively. --

Page 18, fourth paragraph:

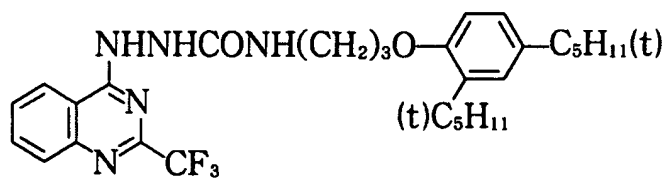
--According to the configuration of ~~above~~ above-described (1) to (6) and (15) to (22) enables to obtain a photothermographic imaging material having high density and superior light radiated image stability and further having improved silver color tone can be obtained can be obtained. --

Page 49, first paragraph:

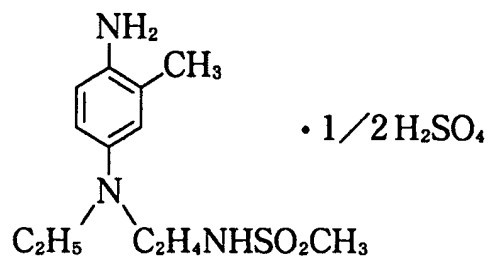
--In the formula, X_1 represents chalcogen atom or $-CHR_1-$ (R_1 represents hydrogen, halogen, alkyl group, alkenyl group, aryl group or heterocyclic group) and R_2 represents alkyl group. The two R_2 s can be either same or different, and at least one of them is secondary or tertiary alkyl group. R_3 represents hydrogen atom or a group which can be a substituent on a benzene ring. R_4 represents a group which can be a substituent on a benzene ring. m and n represent integer of 0 to 2 respectively. -

Page 77, last line delete:

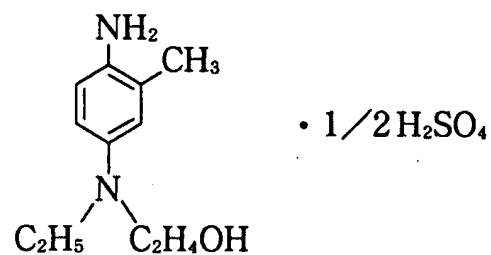
D-1



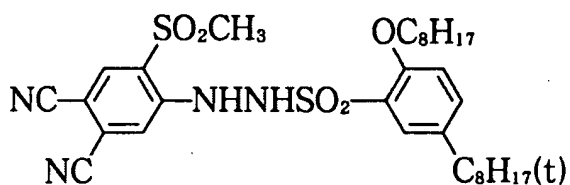
D-2



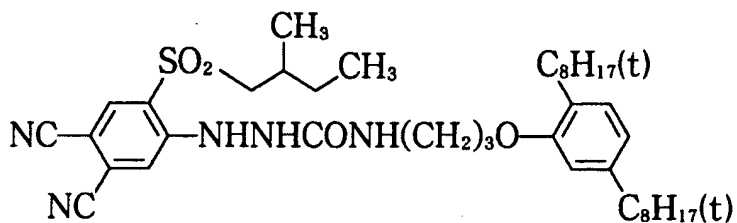
D-3



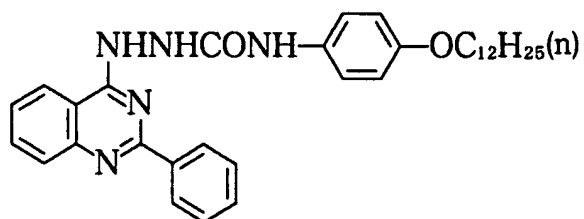
D-4



D-5



D-6



Page 99, first paragraph:

--In the formula, R_{11} represents a substituted or unsubstituted alkyl group, R_{12} represents hydrogen atom or substituted or unsubstituted alkyl or acylamino groups. R_{11} and R_{12} are not ~~2-hydroxyphenylmethyl~~ 2-hydroxyphenylmethyl group. R_{13} represents hydrogen atom or substituted or unsubstituted alkyl group, and R_{14} represents a group capable of being substituent on a benzene ring. -

Page 160, second paragraph:

--Here, "do not substantially become perpendicular" is referred to the ~~angles~~ angles of preferably ~~55°C to 88°C~~ 55° to 88°C more preferably ~~60°C to 86°C~~ 60° to 86°C still preferably ~~65°C to 84°C~~ 65° to 84°C most preferably ~~70°C to 82°C~~ as 70° to 82°C as the angle most ~~closed~~ close to the perpendicular during the laster scanning. --

Page 165, first paragraph to pages 165-166, bridging paragraph:

--The developing condition of the photothermographic imaging material varies depending on instruments, apparatus and means used, but typically, the development is carried out by heating the photothermographic imaging material exposed to an image at suitable high temperature. A latent image obtained after the exposure is developed by heating the photothermographic imaging

material at moderately high temperature (from about 80 to ~~2000°C~~, 200°C preferably from about 100 to ~~2000°C~~) 200°C for a sufficient time period (generally from about one second to about two minutes).

When the heating temperature is lower than ~~800°C~~, 80°C sufficient image density is not obtained in a short time, and when it is higher than ~~2000°C~~, 200°C the binders are melted and adverse effects are given not only to the image itself but also to transport ability and a developing machine such as transfer to the rollers. The silver image is produced by an oxidation reduction reaction between the organic silver salt (functions as the oxidizing agent) and the reducing agent due to heating. This reaction process progresses with supplying no process liquid such as water or the like from the outside. -

Pages 173-174, bridging paragraph to pages 176-177, bridging paragraph:

--Using the mixing stirrer shown in JP-B-58-, $\frac{1}{4}$ amount of the solution (B1) and total amount of the solution (C1) were added to the solution (A) with controlling the temperature at ~~200°C~~ 20°C and pAg at 8.09 by the simultaneous mixing method over 4 min 45 sec to perform the nuclear formation. After 1 min, the total amount of the solution (F1) was added. Using (E1), the pAg value was appropriately controlled in the meantime. After 6 min, $\frac{3}{4}$

amount of the solution (B1) and the total amount of the solution (D1) were added with controlling the temperature at ~~200°C~~ 20°C and pAg at 8.09 by the simultaneous mixing method over 14 min 15 sec. After stirring for 5 min, the temperature was lowered to ~~400°C~~ 40°C and the total amount of the solution (G1) was added to precipitate silver halide emulsion. Leaving 2000 ml of the precipitated portion, supernatant was eliminated, and 10L of water was added to precipitate the silver halide emulsion again. Leaving 1500 ml of the precipitated portion, the supernatant was eliminated, 10 L of water was further added, then after stirring, the silver halide emulsion was precipitated again. Leaving 1500 ml of the precipitated portion, the supernatant was eliminated, subsequently, the solution (H1) was added, the temperature was elevated to ~~600°C~~, 60°C and the stirring was further performed for 120 min. Finally, pH was adjusted to 5.8 and water was added to become 1161 g per 1 mol of the silver amount to yield the photosensitive silver halide emulsion A.

This emulsion was made up of monodisperse cubic iodide bromide silver particles with mean particle size of 25 nm, variation coefficient of particle sizes of 12% and [100] face ratio of 92% (the content of AgI was 3.1 mol%).

<Preparation of photosensitive silver halide emulsion B>

The preparation was carried out as is the case with the preparation of photosensitive silver halide emulsion A, except that the temperature at addition by the simultaneous mixing method was changed to ~~40°C~~. 40°C This emulsion was made up of monodisperse cubic iodide bromide silver particles with mean particle size of 50 nm, variation coefficient of particle sizes of 12% and [100] face ratio of 92% (the content of AgI was 3.5 mol%).

<Preparation of powder organic silver salt A>

Behenic acid (130.8 g), arachidic acid (67.7 g), stearic acid (43.6 g), and palmitic acid (2.3 g) were dissolved in 4720 ml of pure water at ~~80°C~~ 80°C. Next, 540.2 ml of an aqueous solution of sodium hydroxide at 1.5 mol/L was added, and 6.9 ml of concentrated nitric acid was added, and subsequently the mixture was cooled to ~~55°C~~ 55°C to yield sodium fatty acid solution. With retaining the temperature of this sodium fatty acid solution at ~~55°C~~ 55°C, 36.2 g of the above photosensitive silver halide emulsion A and 9.1g of the above photosensitive silver halide emulsion B, and 450 ml of pure water were added and stirred for 5 min.

Next, 468.4 ml of 1 mol/L silver nitrate solution was added over 2 min, and stirred for 10 min to yield an organic silver salt dispersion. Subsequently, the obtained organic silver salt dispersion was transferred to a water washing vessel, distilled water was added and stirred, then the organic silver salt was surfaced-separated by leaving at rest, and lower water-soluble salts were eliminated. Subsequently, water washing with distilled water and discharging water were repeated until the conductivity of the discharged water became 2 $\mu\text{S}/\text{cm}$, and centrifuge dehydration was carried out. The obtained cake-like organic silver salt was dried using a flash dryer, Flash Jet Dryer (supplied from Seishin Enterprise Co., Ltd.) by an operation condition of nitrogen gas atmosphere and hot wind temperature at a dryer inlet until the water content became 0.1 % to yield the dried powder of organic silver salt A.

From the result of analysis using the electron microscope for the photothermographic imaging material 1 (described below) made using this organic silver salt, the organic silver salt was made up of tabular particles with mean particle size (diameters of corresponding circles) of 0.08 μm , aspect ratio of 5 and monodisperse degree of 10%.

An infrared moisture meter was used for the measurement of the water content in the organic silver salt composition.

<Preparation of predispersing solution A>

As the image forming layer binder, a predispersing solution A was prepared by dissolving 14.57 g of $-\text{SO}_3\text{K}$ group-containing polyvinyl butyral (T_g : ~~75°C~~ 75°C, 0.2 mmol/g of $-\text{SO}_3\text{K}$ is contained) in 1457 g of MEK, gradually adding 500 g of the powder organic silver salt A with stirring by a dissolver DISPERMAT CA-40M type supplied from VMA-GETZMANN, and thoroughly mixing.

Pages 179-180, bridging paragraph:

--Under an inert gas atmosphere (nitrogen 97%), the photosensitive emulsion dispersion 1 (50 g) and 15.11 g of MEK were kept at ~~21°C~~ 21°C with stirring, 1000 μl of a chemical sensitizer S-5 (0.5% methanol solution) was added, after 2 min, 390 μl of the Antifoggant 1 (10% methanol solution) was added, and stirred for one hour. Further, 494 μl of calcium bromide (10% methanol solution) was added, stirred for 10 min, subsequently, a gold sensitizer Au-5 at the amount corresponding to 1/20 mol of the above chemical sensitizer was added, and further stirred for 20 min. Subsequently, 167 ml of the stabilizer solution was added, stirred for 10 min, then 1.32 g of the infrared sensitizing dye solution A was added, and stirred for one hour. Subsequently,

the temperature was lowered to ~~130°C~~ 13°C and the stirring was performed for additional 30 min. With holding the temperature at ~~130°C~~ 13°C, 0.5 g of the addition solution d, 0.5 g of the addition solution e, 0.5 g of the addition solution f, and 13.31 g of the binder used for the predispersing solution A were added, stirred for 30 min, then 1.084 g of tetrachlorophthalic acid (9.4% MEK solution) was added, and stirred for 15 min. The image forming layer coating solution was obtained by sequentially adding and stirring 12.43 of the addition solution a, 1.6 ml 10% MEK solution of Desmodur N3300 (aliphatic isocyanate supplied from Mobey), 4.27 g of the addition solution b and 4.0 g of the addition solution c with further continuing to stir. -

Pages 184-185, bridging paragraph to pages 185-186 bridging paragraph:

--The back coat layer coating solution and the back coat layer protection layer coating solution prepared above were coated on the under coating under layer B-2 by an extrusion coater at a coating velocity of 50 m/min such that the thickness of each dried film was 3.5 μm . The drying was carried out over 5 min. using dried wind with drying temperature at ~~100°C~~ 100°C and dew point at ~~10°C~~ 10°C.

The photothermographic imaging materials A-1 to A-15 shown in Table 1 were manufactured by simultaneously overlaying and coating the image forming layer coating solution and the image forming layer protection layer (surface protection layer) coating solution on the under coating upper layer A-2 using the extrusion coater at the coating velocity of 50 m/min. The coating was carried out such that a coated silver amount is 1.2 g/m² in the image forming layer and the thickness of dried film is 2.5 μm (surface protection layer upper layer: 1.3 μm, surface protection layer lower layer: 1.2 μm) in the image formation protection layer (surface protection layer). Subsequently, the drying was carried out for 10 min. using the dried wind with drying temperature ~~750°C~~ 75°C and dew point at ~~100°C~~ 10°C.

The sample A-10 was prepared as is the case with the sample A-1, except that the fluorinated surfactant in the back coat layer protection layer and the image forming layer protection layer (upper and lower layers) was changed from SF-17 to C₈F₁₇SO₃Li in the sample A-1.

The sample A-11 was made as in the case with the sample A-1, except that -SO₃K group-containing polyvinyl butyral (Tg ~~650°C~~ 65°C, 0.2 mmol/g of SO₃K is contained) was used in place of -SO₃K group-containing polyvinyl butyral (Tg ~~750°C~~ 75°C, 0.2 mmol/g of SO₃K is contained) as the image forming layer binder in the preparation of the predispersing solution A in the sample A-1.

<Exposure and development processing>

The photothermographic imaging materials A-1 to A-15 manufactured above were cut into half-cut size (34.5 cm x 43.0 cm), and then processed by the following procedure using the thermal development apparatus shown in FIG. 1.

The photothermographic imaging material F was taken out from the film tray C, transported to the laser exposure portion 121, and subsequently given exposure by laser scanning using an exposure machine where semiconductor laser (maximum output is made 70 mW by joining two of maximum output 35 mW per one) with vertical multiple mode of wavelength 810 nm at high frequency superposition is made an exposure source, from the side of the image formation layer face. At the time, the image was formed by making the angle of the exposure face of the photothermographic imaging material F and the exposure laser beam L ~~75°C~~ 75°C. Subsequently, the photothermographic imaging material F was transported to the developing portion 130, the heat drum 1 heated at 125°C 125°C for 15 sec to perform thermal development such that the protection layer at the side of the image formation layer of the photothermographic imaging material F was in contact with the surface of the drum, and then photothermographic imaging material was taken out of the apparatus. At the time, the transport velocity from the feeding portion 110 to the exposure portion 121,

the transport velocity at the exposure portion and the transport velocity at the developing portion were 20 mm/sec, respectively. The exposure and the development were carried out in the room adjusted at ~~230C~~ 23°C and 50% RH. The exposure was performed gradually by reducing the amount of exposure energy of logE0.05 per one step from the maximum output. -

Page 192, first paragraph to pages 192-193, bridging paragraph:

--The back face coating solution, back face layer protecting solution prepared as described above were coated onto the prepared under coating layer B-2 by an extruding coater such that the thickness of dried film became respectively 3.5 μm , and dried. Drying was performed over 5 min. using a drying wind with a drying temperature of ~~1000C~~ 100°C and a dew point of ~~100C~~ 10°C.

Applying solutions of the above image forming layer and image forming layer protection layer (surface protection layer) were applied onto the under coating layer A-2 at the applying rate of 50 m/min by an extruding coater. These two layers were overlaid and coated in plurality simultaneously such that applied silver is 1.2 g/m² in the image forming layer, dried thickness of the image forming layer protection layer (surface protection layer) is 2.5 μm (surface protection layer upper layer is 1.3 μm , surface protection layer lower layer is 1.2 μm), and dried. Drying was

performed over 10 min. using a drying wind with a drying
temperature of ~~750C~~ 75°C. --